

Applicant : Guansan Chen
Serial No. : 10/600,414
Filed : June 20, 2003
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Attorney's Docket No.: 13854-050001

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) An optical amplifier comprising:
 ~~An~~ an optical signal input for receiving an input optical signal to be amplified;
 means for measuring a power of the input optical signal;
 [[A]]a pumping laser input for receiving a pumping laser input signal for use in
 amplifying the input optical signal;
 [[M]]means for measuring a power of the pumping laser input signal;
 [[A]]a combiner for combining the pumping laser input signal and the input optical
 signal;
 [[A]]an EDFA having an input coupled to the output of the combiner and an output
 coupled to a splitter, the splitter dividing out a portion of the signal output from the EDFA and
 attributable to a pump residual power of the pumping laser after amplification by the EDFA;
 [[m]]means for measuring the pump residual power; and
 [[F]]feedback means for calculating an expected ratio of the pump residual power and the
 pumping laser input power using data including the power of the input optical signal,
 determining an actual ratio of the pump residual power and the pumping laser input power, and
 adjusting a current of the pumping laser by comparing the expected ratio with using the actual
 ratio residual power and the pumping laser input signal power.
2. (Original) The optical amplifier of claim 1 further comprising a pumping laser having a
 first frequency and coupled to the pumping laser input.

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3. (Original) The optical amplifier of claim 1 wherein the means for measuring a power is a photodiode.
4. (Original) The optical amplifier of claim 1 further comprising a gain flattening filter (GFF) coupled to an output of the splitter for receiving and filtering a remainder signal attributable to an amplified input signal received from the splitter and providing a flattened output signal.
5. (Original) The optical amplifier of claim 4 further comprising a variable optical attenuator coupled to the output of the GFF for variably adjusting a received signal to achieve constant power output.
6. (Original) The optical amplifier of claim 1 wherein the combiner is a wave division multiplexing (WDM) combiner.
7. (Original) The optical amplifier of claim 6 wherein the WDM combiner combines an input signal of substantially 1550 NM with a pumping laser input of substantially 980 NM.
8. (Original) The optical amplifier of claim 1 wherein the splitter is a wave division multiplexing (WDM) splitter.
9. (Original) The optical amplifier of claim 1 wherein the WDM splitter splits an output of the EDFA into a first signal having a first frequency and a second signal having a second frequency, where the first signal has a frequency that is substantially 1550 NM and the second frequency is substantially 980 NM.
10. (Original) The optical amplifier of claim 1 wherein the WDM splitter splits an output of the EDFA into a first signal having a first frequency and associated with an amplified version of the input signal and a second signal having a second frequency and associated with the pumping laser signal

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11. (Currently Amended) An optical amplifier comprising:
[[A]]an optical signal input for receiving an input optical signal to be amplified;
[[A]]a pumping source input for receiving a pumping source input signal for use in amplifying the input optical signal;
[[A]]a combiner for combining the pumping source input signal and the input optical signal;
[[A]]an EDFA having an input coupled to the output of the combiner and an output coupled to a splitter, the splitter dividing out a portion of the signal output from the EDFA and attributable to a pump residual of the pumping laser after amplification by the EDFA;
[[E]]error correction means for calculating an expected ratio of the pump residual and the pumping source input signal using data including a power of the input optical signal, determining an actual ratio of the pump residual and the pumping source input signal, and measuring the pump residual and adjusting the pumping input signal provided by the pumping source by comparing the expected ratio with the actual ratio.
12. (Original) The optical amplifier of claim 11 further comprising a pumping laser having a first frequency and coupled to the pumping source input.
13. (Original) The optical amplifier of claim 11 wherein the error correction means includes a photodiode for measuring a power of a pump residual.
14. (Original) The optical amplifier of claim 11 further comprising a gain flattening filter (GFF) coupled to an output of the splitter for receiving and filtering a remainder signal attributable to an amplified input signal received from the splitter and providing a flattened output signal.
15. (Original) The optical amplifier of claim 14 further comprising a variable optical attenuator coupled to the output of the GFF for variably adjusting a received signal to achieve constant power output.

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16. (Original) The optical amplifier of claim 11 wherein the combiner is a wave division multiplexing (WDM) combiner.
17. (Original) The optical amplifier of claim 16 wherein the WDM combiner combines an input signal of substantially 1550 NM with a pumping source input of substantially 980 NM.
18. (Original) The optical amplifier of claim 11 wherein the splitter is a wave division multiplexing (WDM) splitter.
19. (Original) The optical amplifier of claim 11 wherein the WDM splitter splits an output of the EDFA into a first signal having a first frequency and a second signal having a second frequency, where the first signal has a frequency that is substantially 1550 NM and the second frequency is substantially 980 NM.
20. (Original) The optical amplifier of claim 11 wherein the WDM splitter splits an output of the EDFA into a first signal having a first frequency and associated with an amplified version of the input signal and a second signal having a second frequency and associated with the pumping source signal.
21. (Currently Amended) An optical amplifier comprising:
[[A]]an optical signal input for receiving an input optical signal to be amplified;
[[A]]a pumping source input for receiving a pumping source input signal for use in amplifying the input optical signal;
[[A]]an EDFA operable to use the pumping source input signal to amplify the input optical signal producing an output optical signal; and
[[A]]an error correction controller for calculating an expected ratio of a pump residual and the pumping source input signal using data including a power of the input optical signal, determining an actual ratio of the pump residual and the pumping source input signal, measuring the pump residual and adjusting the pumping input signal provided by the pumping source by comparing the expected ratio with the actual ratio.

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22. (Currently Amended) A method for amplifying an optical signal using an EDFA, comprising:

measuring an input optical signal;

[[A]]amplifying an the input optical signal using an EDFA producing an amplified output optical signal; and

[[M]]measuring a pump residual power component of the amplified output optical signal;

measuring a pump input power; and

and using the measured pump residual power component to adjusting a performance of the EDFA by calculating an expected ratio of the pump residual power and the pump input power, determining a real ratio of the pump residual power and the pump input power, and comparing the expected ratio with the actual ratio.